

Claims

1. Method of non-invasive exploration for assessing the digestive motricity and/or transit of a human or animal subject, characterized in that it consists of:
 - 5 - said subject swallowing an ingestible transmitting element (E) which is non-digestible containing means transmitting at a given fixed frequency;
 - measuring, at a given time using at least three reception means (R1, R2, R3) distributed around said subject's trunk, the phase shift of the frequency transmitted by said transmission means relative to a reference
 - 10 phase;
 - determining by triangulation on the basis of the three phase-shift measurements the position of said element;
 - defining, according to the position of said element, a data for the assessment of the digestive motricity and/or transit.
- 15 2. Method according to claim 1, characterized in that the measurements corresponding to the phase shift are stored in memory means (5).
3. Method according to claim 1 or 2, characterized in that the receiving
- 20 means (R1, R2, R3) are placed around the abdominal belt.
4. Method according to claim 1, characterized in that a series of position measurements are made which are spread over time.
- 25 5. Method according to one of the preceding claims, characterized in that a position reference measurement is made when the element is in the mouth of the subject, before he swallows it.

6. Method according to one of the preceding claims, characterized in that the power supply of the transmitting element (E) is triggered at given times and the corresponding phase-shift measurements at each given time are stored in the memory means (5).

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7. Method according to any one of the preceding claims, characterized in that the amplitude of the transmission frequency of the transmission means is modulated as a function of the amplitude of a signal picked up by a sensor included in the transmitting element (E), said sensor being able to pick up a
10 signal representing a physiological characteristic.

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8. Method according to any one of the preceding claims, characterized in that said subject ingests several transmitting elements over a period of time, each transmitting element having a characteristic frequency.

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9. Non-invasive exploration system for assessing the digestive motricity and/or transit of a human or animal subject, in particular for the implementation of the method according to claims 1 to 8, characterized by:

- on the one hand:

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- an ingestible transmitting element (E) which cannot be digested by said subject containing means transmitting at a given fixed frequency;
and

- on the other hand:

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- receiving means (R1, R2, R3) comprising at least three receivers (A1, A2, A3) intended to be placed around the trunk of said subject, each receiver being able to measure at a given time the phase shift of said transmission frequency relative to a reference phase;

- means for processing and analyzing (3, 8) the three phase-shift measurements made by said receivers which are able to determine, by triangulation, the position of said element.

5 10. System according to claim 9, characterized in that it also comprises means for storing in the memory (5) the phase-shift measurements made by the receivers at a given time.

10 11. System according to claim 9 or 10, characterized by a high transmission frequency.

12. System according to one of claims 10 to 12, characterized in that the transmitting element (E) comprises integrated power supply means.

15 13. System according to one of claim 9 to 12, characterized in that the transmitting element (E) comprises induced power supply means.

14. System according to one of claims 9 to 13, characterized in that the receivers (R1, R2, R3) are distributed on a belt (1) which is able to be fixed on
20 the trunk of the subject.

15. System according to claim 14, characterized in that the belt also comprises means for the induction of the power supply of said transmitting element.

25 16. System according to claim 14 or 15, characterized in that the analysis and processing means include a card comprising means for analogue-to-digital conversion (ADC) of the signals picked up and memory means (5) common to the three receivers (R1, R2, R3) and arranged on the belt (1).

30 17. System according to any one of claims 9 or 16, characterized by means (7) for connecting the memory means (5) to

the processing and analysis means and for transferring the data relating to the phase shifts measured.

18. System according to any one of claims 9 to 17, characterized in that
5 the transmitting element (E) comprises a sensor which is able to pick up a signal representing a physiological characteristic, the amplitude of the frequency transmitted by the transmission means being able to be modulated as a function of the amplitude of the signal picked up by said sensor.
- 10 19. System according to any one of claims 9 to 18, characterized in that it comprises several transmitting elements intended to be ingested by said subject over a period of time.